



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/712,766	11/12/2003	Kurt Schmidt	MTS121841	7401
26389 7590 04/15/2008 CHRISTENSEN, O'CONNOR, JOHNSON, KINDNESS, PLLC 1420 FIFTH AVENUE SUITE 2800 SEATTLE, WA 98101-2347				
EXAMINER SHAND, ROBERTA A				
ART UNIT		PAPER NUMBER		
2616				
MAIL DATE		DELIVERY MODE		
04/15/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/712,766

**Applicant(s)**

SCHMIDT, KURT

**Examiner**

Roberta A. Shand

**Art Unit**

2616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SE-US)  
Paper No(s)/Mail Date 11/12/2003
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

***Claim Rejections - 35 USC § 101***

1. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 15-17 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claims 15-17 contain non-statutory language: “computer-program-product with program-code-means stored on a machine-readable data carrier” and “computer program with program-code-means”. These claims do not define any structural or functional interrelationships between the data structures and other claimed aspects of the invention which permit the data structure’s functionality to be realized.

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Keevill (U.S. 6359938 B1).

3. Regarding claim 1, Keevill teaches a method for analyzing an OFDM signal with an analyzing device having a signal section with a bandwidth smaller than the bandwidth of the

OFDM signal, the OFDM signal transporting a series of data symbols on several orthogonal carrier frequencies, each data symbol having a useful part separated by a guard period from neighboring data symbols (col. 4, line 48 – col. 5, line 3), comprising the steps of low pass filtering (fig. 13, 156 and col. 20, lines 12-28) of the OFDM signal with a low pass filter and shifting (fig. 13, 144 and col. 19, line 52 – col. 20, line 11) the spectrum of the OFDM signal in order to obtain a frequency shifted filtered OFDM signal, whereby the length of the impulse response of the low pass filter is shorter than the length of the guard periods of the data symbols (col. 22, lines 1-23).

4. Regarding claims 2 and 8, (col. 22, lines 1-23) the length ( $\tau$ ) of the impulse response of the low pass filter is shorter than  $\frac{1}{4}$  of the length of the guard periods of the data symbols. Keevill teaches that the guard interval size is  $T/4$ , which includes this limitation.

5. Regarding claims 3 and 10, Keevill teaches (col. 22, lines 1-23) the length of the impulse response of the low pass filter is about  $2.5/16$  of the length of guard periods of the data symbols. Keevill teaches that the guard interval size is  $T/4$ , which includes this limitation.

6. Regarding claim 4, Keevill teaches a method for analyzing an OFDM signal transporting a series of data symbols on several orthogonal carrier frequencies with an analyzing device having a signal section with a bandwidth smaller than the bandwidth of the OFDM signal, whereby a first specific number of carrier frequencies transport a pilot signal within the OFDM signal (col. 21, lines 16-33), comprising the steps of low pass filtering (fig. 13, 156 and col. 20,

lines 12-28) of the OFDM signal with a low pass filter and shifting (fig. 13, 144 and col. 19, line 52 – col. 20, line 11) the spectrum of the OFDM signal in order to obtain a frequency shifted filtered OFDM signal, and estimating several synchronization parameters (col. 26, line 55 – col. 27, line 33) of the OFDM signal by use of the pilot signal, whereby the number of useful carrier frequencies transporting the pilot signal is reduced to a second specific number by the signal section with its bandwidth smaller than the bandwidth of the OFDM signal and averaging the estimated synchronization parameters of the OFDM signal over several data symbols in order to compensate the reduced number of useful carrier frequencies transporting the pilot signal (col. 27, line 34 – col. 27, line 63).<sup>3</sup>

7. Regarding claim 5, Keevill teaches (col. 6, lines 12-15) the first specific number is 4 and the second specific number is 2. Keevill teaches that the magnitude of the carriers is absolute values, which reads on this limitation.

8. Regarding claim 6, Keevill teaches (col. 27, lines 21-33) the estimated characteristic values of the OFDM signal are symbolwise frequency offset and/or clock offset and/or phase offset resulting therefrom and/or gain.

9. Regarding claim 7, Keevill teaches (col. 4, line 43 – col. 5, line 3) each data symbol has a useful part separated by a guard period from neighboring data symbols, whereby the length of the impulse response of the low pass filter is shorter than the length of the guard periods of the data symbols (col. 22, lines 1-23).

10. Regarding claim 9, Keevill teaches the estimation of the synchronization parameters is done for each symbol of the pilot signal and is averaged over several symbols.

11. Regarding claim 11, Keevill teaches (col. 20, lines 30-46) the OFDM signal is resampled after low pass filtering.

12. Regarding claim 12, Keevill teaches analyzing device for analyzing an OFDM signal transporting a series of data symbols on several orthogonal carrier frequencies, each data symbol having a useful part separated by a guard period from neighboring data symbols (col. 4, line 48 – col. 5, line 3), whereby the analyzing device has a signal section with a bandwidth smaller than the bandwidth of the OFDM signal, whereby the analyzing device has a low pass filter (fig. 13, 156 and col. 20, lines 12-28) for low pass filtering of the OFDM signal and a frequency shifter for shifting (fig. 13, 144 and col. 19, line 52 – col. 20, line 11) the spectrum of the OFDM signal in order to obtain a frequency shifted filtered OFDM signal, and whereby the length of the impulse response of the low pass filter is shorter than the length of the guard periods of the data symbols (col. 22, lines 1-23).

13. Regarding claim 13, Keevill teaches analyzing device for analyzing an OFDM signal transporting a series of data symbols on several orthogonal carrier frequencies, whereby the analyzing device has a signal section with a bandwidth smaller than the bandwidth of the OFDM signal within the OFDM signal, whereby a first specific number of carrier frequencies transport a pilot signal (col. 21, lines 16-33), whereby the analyzing device has a low pass filter for low pass

filtering (fig. 13, 156 and col. 20, lines 12-28) of the OFDM signal and a frequency shifter for shifting (fig. 13, 144 and col. 19, line 52 – col. 20, line 11) the spectrum of the OFDM signal in order to obtain a frequency shifted filtered OFDM signal, and estimating means for estimating col. 26, line 55 – col. 27, line 33) several synchronization parameters of the OFDM signal by use of the pilot signal, whereby the number of carrier frequencies transporting the pilot signal is reduced to a second specific number by the signal section with its bandwidth smaller than the bandwidth of the OFDM signal and whereby the estimating means averages the estimated synchronization parameters of the OFDM signal over several data symbols l in order to compensate the reduced number of carrier frequencies transporting the pilot signal (col. 27, line 34 – col. 27, line 63).

14. Regarding claim 14, Keevill (abstract) a digital storage medium with control signals electronically readable from the digital storage medium, which interact with a programmable computer or digital signal processor.

***Conclusion***

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Roberta A. Shand whose telephone number is (571)272-3161. The examiner can normally be reached on M-F 9:00am-5:30pm.

16. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Firmin Backer can be reached on 571-272-6703. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

17. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Roberta A Shand  
Examiner  
Art Unit 2616

/Melvin Marcelo/  
Primary Examiner, Art Unit 2616